11 February 65

TECHNICAL PROPOSAL

MICRO-STEROSCOPE

or

STEREO-MICROSCOPE

Prepared for:

STATINTL [redacted]

Roslyn Station
Arlington, Virginia

Prepared by:

STATINTL [redacted]

COMPANY CONFIDENTIAL

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INTRODUCTION

STATINTL [redacted] is pleased to submit the following proposal for the design and fabrication of a new Micro-Stereoscope.

This unit will be designed similar to the isometric drawing enclosed (see Fig. I) in this proposal and will be capable of being utilized either as a Stereo-Microscope or a Micro-Stereoscope without additional attachments.

It is our intent in designing this unit to make it as versatile as possible without restricting optical or mechanical performance or ease of operation.

DESCRIPTION

This Micro-Stereoscope will be a streamlined precision built unit riggedly constructed for continuous operation and repeatibility.

This unit can easily be attached to many types of base or stand and can be operated in either a horizontal or vertical position with all the adjustments and controls convenient to the operator.

OPTICAL SYSTEM (see Fig. II)

Two independent zoom systems are employed to allow for variation in magnification between images. They can be mechanically coupled when stereo-microscope examination is required. These zoom systems will have a 4 : 1 magnification ratio and will be designed for maximum resolution and contrast in order to assure an over-all performance of at least 5 lines per power.

ROTATING PRISMS

A rotating prism will be incorporated in each side of the optical system for aligning the images. Each image will be capable of 360° rotation and will not be effected in rotation by any other motion.

All prisms and optical elements will be coated and protected where necessary to assure maximum transmission and reflection, and will be mounted securely to maintain alignment.

OBJECTIVES

Three objectives will be utilized, one on each side of the system and one between the systems. They will be highly corrected objectives that can easily be exchanged for various magnifications required.

Several objectives will be available with magnifications of 1X, 2X and 4X which will give magnifications of, from 10X to 160X when a 10X eyepiece is utilized. 5/800

EYEPIECES

Standard wide field eyepieces can be used with the micro-stereoscope, giving the operator a greater range of magnifications, if required. Eye guards designed to rotate and to shield stray light will be furnished.

Rhomboid PRISMS

A rhomboid prism will be utilized in each sie of the unit immediately above the objective. Each prism will be capable of swinging,

for locating the images and for some adjustment in air space distance.

For additional distances, each side of the micro-stereoscope can be moved independently in or out to obtain additional alignment and air space distance. The combined distance will be variable from 25mm to 200mm.

Before the stereo-microscope can be used, the rhomboid prisms must slide out to their stops to clear the stereo-microscope objective aperture. This objective will cover the two zoom apertures when they are mechanically coupled together.

PARALLEL SPACE

In order to obtain focus when both sides of the unit are moved, we will provide parallel space from the low end of the rotating prism to the low end of the inclined prism, below the eyepieces. Since the interpupillary distance need only be set once for each operator, any distant variation above the parallel space will not change focus. After initial setting, distances in locating an air spread will not change the optical path below the parallel space.

CAMERA ATTACHMENT

As an optional feature, we can provide two camera tubes similar to

to trinocular heads for photographing each image, either as a reference for later use, or for different magnifications of the image. This can be accomplished by sliding in a prism to direct the image through the camera tubes to the camera's film plane.

The camera's image plane can be adjusted for focus and to accommodate for various cameras. The focus at the film plane can be viewed and focused with each inclined eyepiece, instead of with a separate eyepiece and prism arrangement below each camera. On the side of each camera tube slide will be a lock to prevent movement. As for field coverage and critical focus, a ground glass with a reticle can be incorporated in a pair of wide field eyepieces for photographic purposes.

WORKING DISTANCE:

With the objectives placed directly over the object, we have allowed for the maximum working distance depending upon on the magnifications used. We will also design the mechanics and controls so that no interference is below the objective level, thus giving maximum room for hands or tools.

The field of view of the object is also a function of the magnification of the system which will be about 2mm at 90X with a working distance of 50mm. Lower magnifications will give a larger field of view and working distance.

MECHANICAL CONTROLS

The following is a list of mechanical controls incorporated in this micro-stereoscope (see Fig. III)

1. Interpupillary distance between 54mm - 78mm
2. Ocular tube movement ± 4mm each.
3. Camera tube separation, 20mm each.
4. Camera tube lock
5. Camera directing prism
6. Rotation prism, 360° image rotation, 180° mechanical
7. Zoom control, 4X ratio
8. Air space slide adjustments, 200mm
9. Rhomboid piviting approximately 120° each
10. Eye guard rotation, 360°
11. Rhomboid retractor
12. Special stand and motions built to customer specifications.

Figure IV shows the movements of the slides and controls. Their dimensions and travel can be changed within reason to suit the customer's requirements.

This micro-stereoscope combination will be fabricated to good commercial practices with sound and practical engineering.

Each micro-stereoscope will have its own case and shipping box to prevent damage due to mis-handling in shipment.

STATINTL

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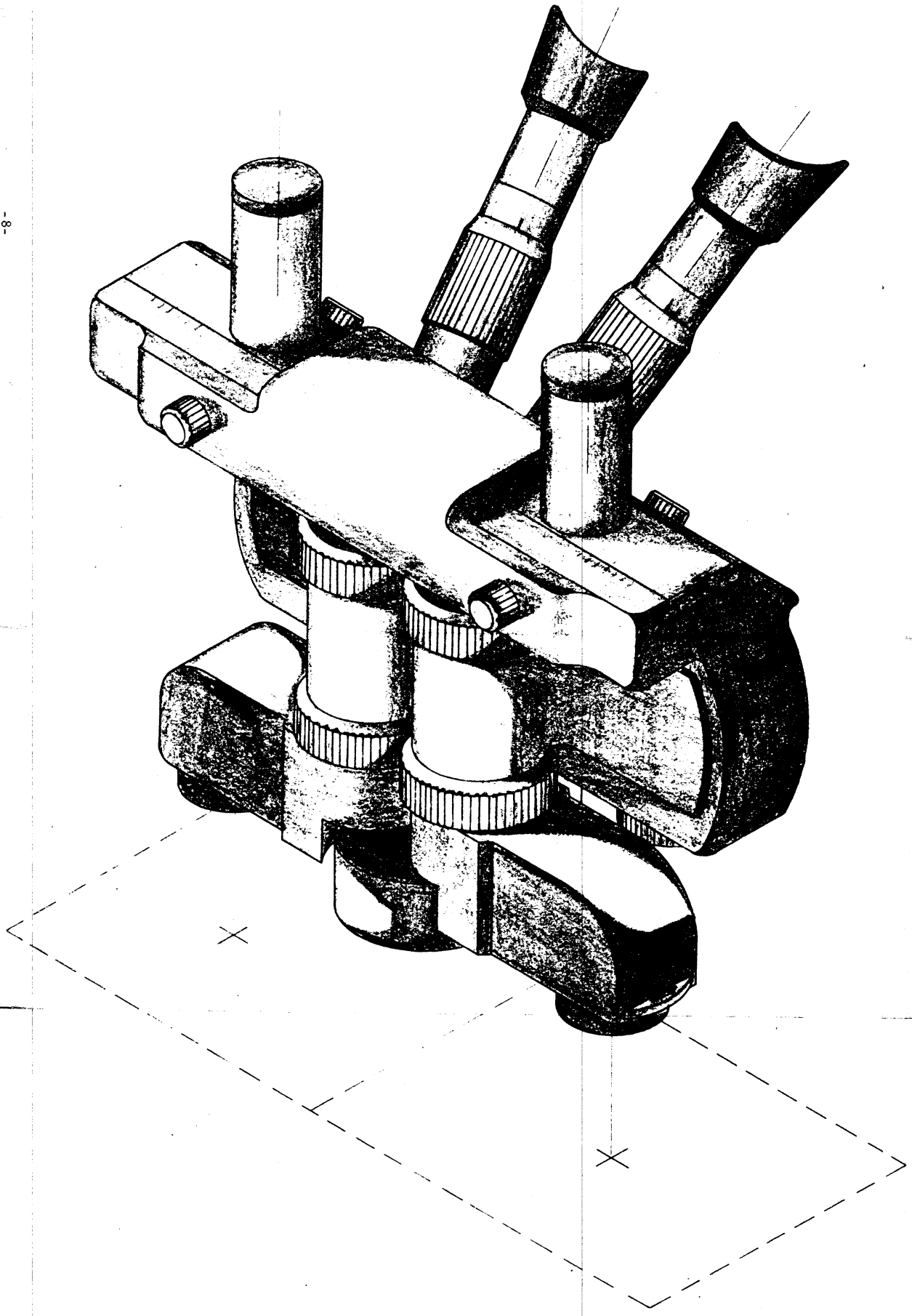

FIGURE I

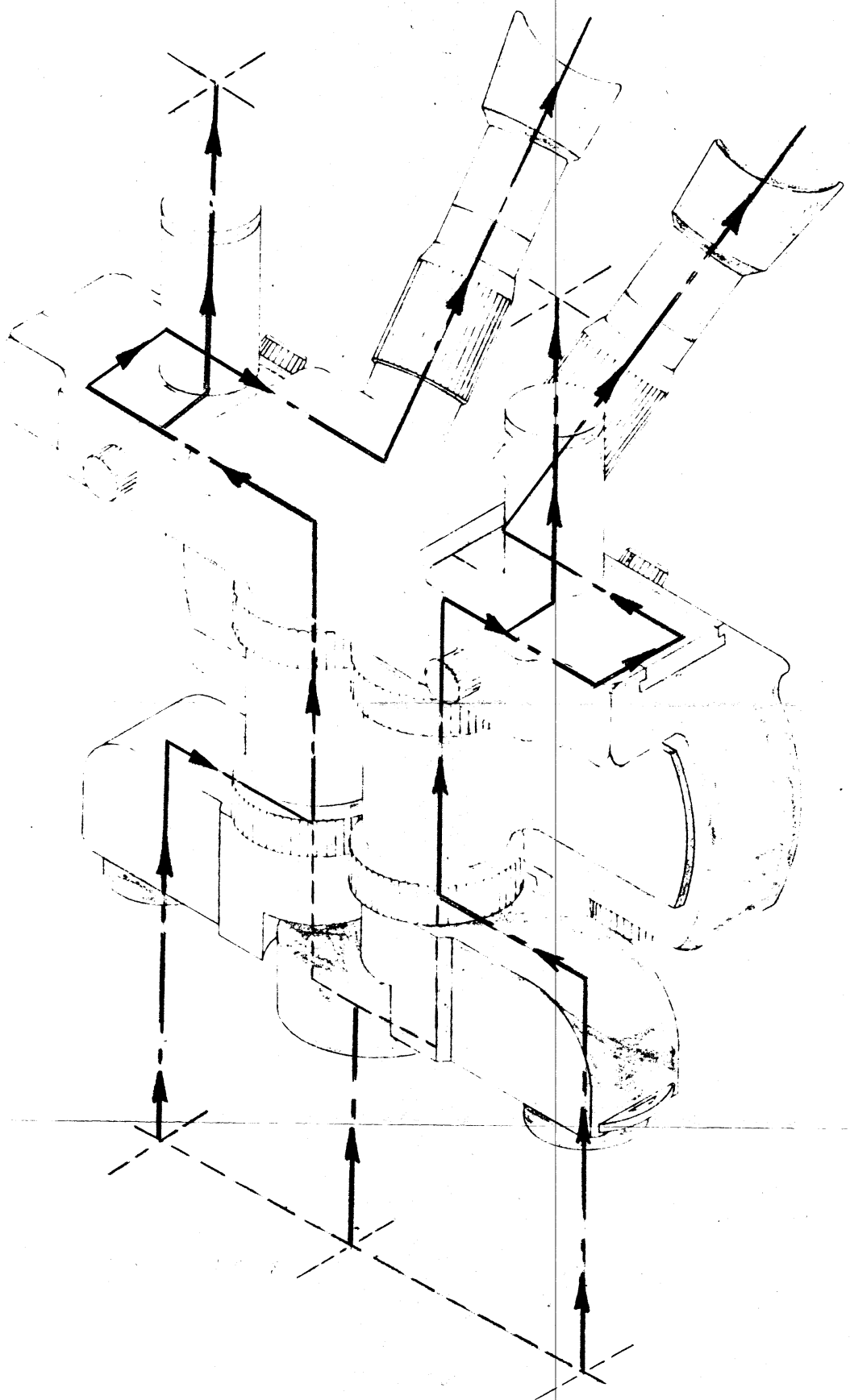

FIGURE II

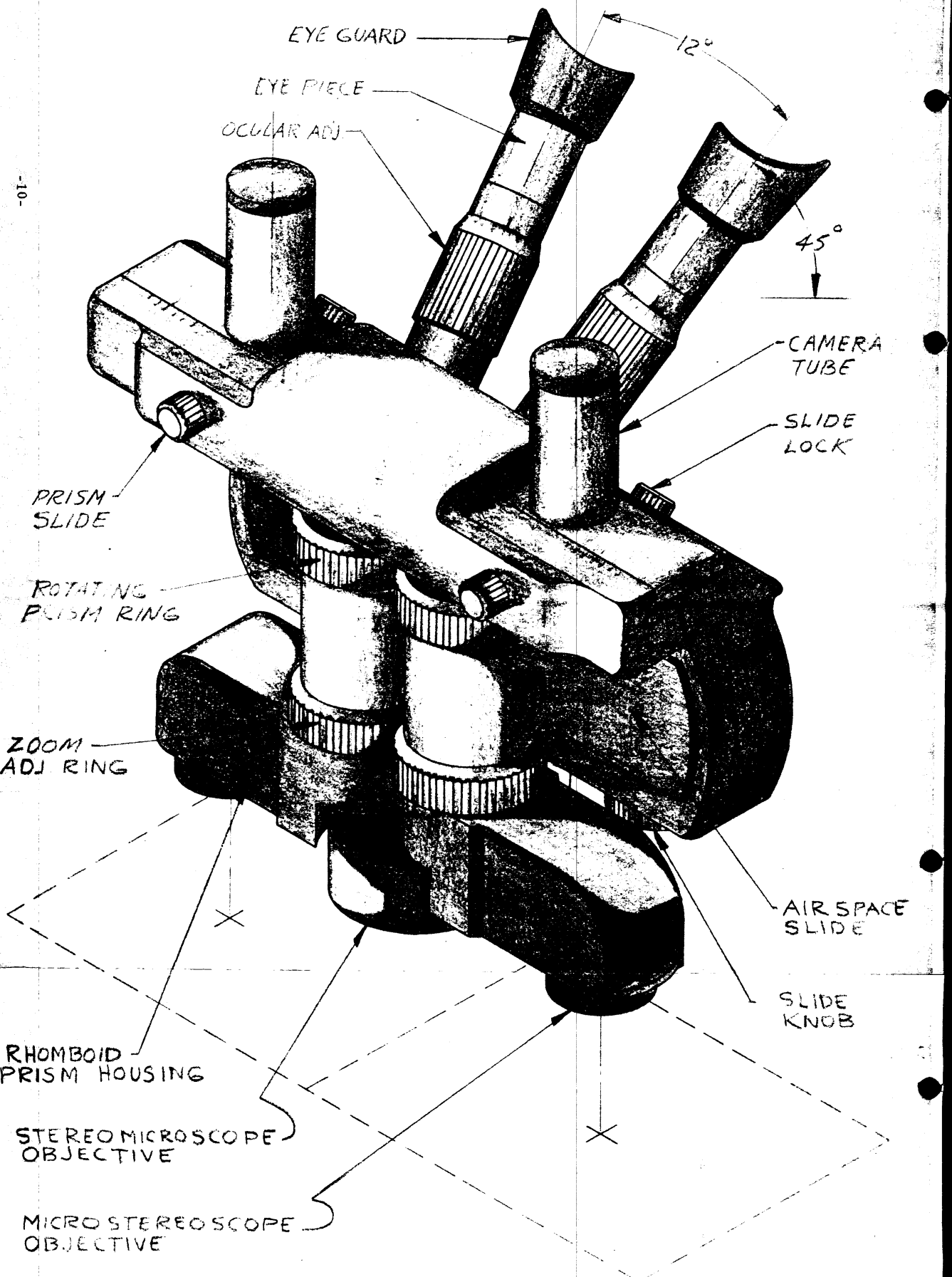

FIGURE III

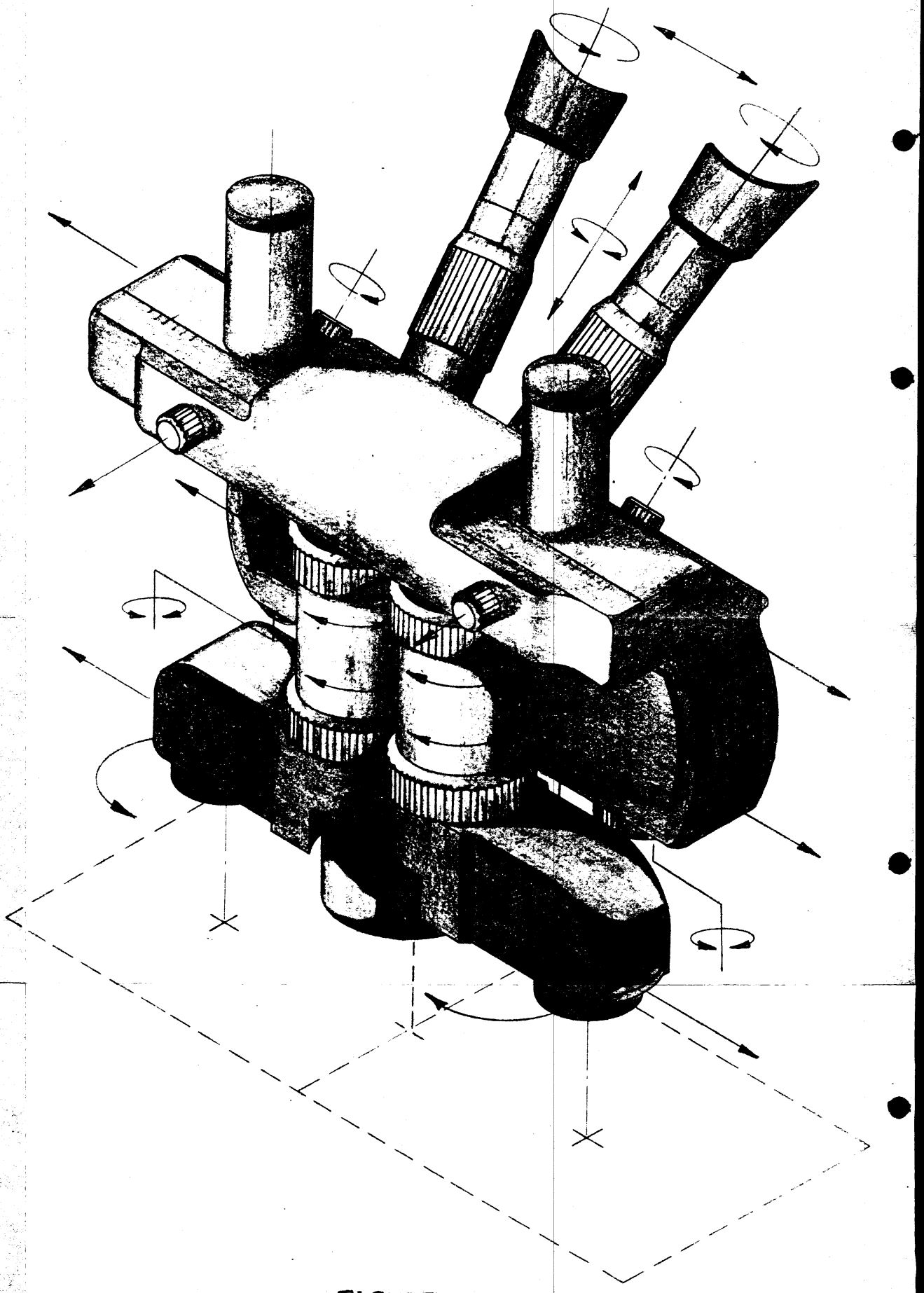

FIGURE IV